

# 1916 : Confirmation of Einstein's photon theory

## Experiment



Robert Millikan (1868 -1953)

- Einstein's photon theory took plank's quantization of light seriously and proposed that Energy could be described by  $E = h\nu - p$
- Millikan devised an apparatus over a period of ten years to test Einstein's theory. It comprised of an evacuated glass tube with alkali metals mounted on a wheel that moved past a scraper knife. These then became incident to monochromatic light at various frequencies

- Millikan measured the "Stopping voltage " needed to halt induced current plotting this versus frequency he found that the relationship was indeed linear, vindicating Einstein. By measuring the slope he also measured plank constant  $h = 6.57 \times 10^{-27}$

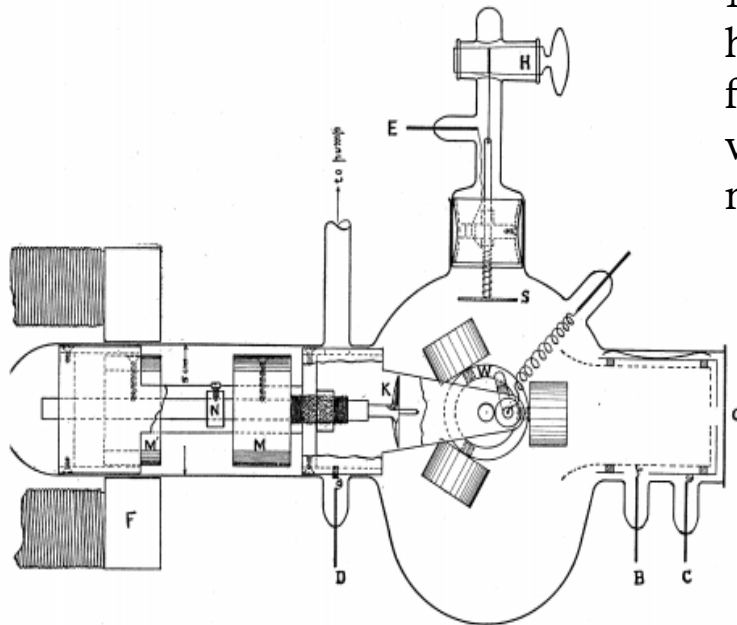


Fig. 2.

## Lasting Impact

The verification of Einstein's photon theory cemented quantum nature of light through photons ( "corpsicules" as they were then known) and established the foundations for the development of quantum theory. This experiment also won Millikan the Nobel prize in physics in 1923.



Experimental set up